

REMARKS

Claims 10, 11, 43-45 and 47-58 are pending in this Application, with claims 10, 11, 43, 56, 57 and 58 being independent claims. The claims stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims of U.S. Patent Nos. 6,650,452; 6,738,542 and 6,321,015 and U.S. Patent Application No. 10/713,037. The claims also stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nakazawa et al. (Electronic Letters, Vol. 31, No. 3, pp. 216-217) (hereafter "*Nakazawa*") in view of U.S. Patent No. 5,717,510 to Ishikawa et al. (hereafter "*Ishikawa*"); as being unpatentable over *Nakazawa* in view of U.S. Patent No. 5,606,445 to Kikuchi et al. (hereafter "*Kikuchi*"); and as being unpatentable over *Nakazawa* in view of U.S. Patent No. 5,218,662 to Dugan (hereafter "*Dugan*"). These rejections are traversed for the reasons below.

The Claims are Patentable over the references cited in the Double-Patenting Rejection

Claims 10, 11, 43-45 and 47-58 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims of U.S. Patent Nos. 6,650,452; 6,738,542 and 6,321,015; and U.S. Patent Application No. 10/713,037.

Applicant submits herewith a terminal disclaimer with respect to U.S. Patent Nos. 6,650,452; 6,738,542 and 6,321,015. Because the double-patenting rejection relating to U.S. Patent Application No. 10/713,037 is provisional, Applicant will address this double-patenting rejection when this rejection ceases to be provisional.

Accordingly, Applicant respectfully requests that the Examiner withdraw the outstanding rejection of claims 10, 11, 43-45 and 47-58 under the judicially created doctrine of obviousness-type double patenting.

The Claims are Patentable Over *Nakazawa* in view of *Ishikawa*

Claims 10, 11, 43-45 and 47-58 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Nakazawa* in view of *Ishikawa*. This rejection is traversed for the reasons below.

Independent claim 10, for example, recites an optical communication system for transmitting a soliton or soliton-like pulse. The communication system comprises a plurality of dispersion elements including at least a fiber length and discrete dispersion compensator where the fiber length and discrete compensator having different dispersions. The path average dispersion of the plurality of dispersion elements is anomalous. See also independent claims 11, 43, 56, 57 and 58.

Nakazawa is directed to an optical soliton communication system where “the average dispersion, D_{avg} , over the soliton period is negative even though partial dispersion in the transmission line is highly positive” (second paragraph, p. 216). Figure 1, for example, shows a transmission line having an average negative group velocity dispersion over the soliton period. As noted by the Examiner, however, *Nakazawa* fails to disclose discrete dispersion compensators.

Ishikawa is directed to techniques for optimizing transmission conditions or implementing optical multiplexing (see, e.g., col. 2, lines 31-37). For example, *Ishikawa* discloses a system for performing compensation to correct for wavelength variations in the light source or in the fiber (see Figure 17), or to correct for self phase modulation (SPM) due to abrupt changes in light intensity where compensators with equal and opposite signs are used at either end of the system (see Figure 42 and col. 20, lines 65 through col. 21, line 41).

No motivation exists, however, for combining *Nakazawa* with *Ishikawa* because each reference is directed to solving a different, unrelated problem. In particular, *Nakazawa* is directed to an optical soliton communication system while *Ishikawa* is directed to techniques for optimizing transmission conditions or implementing optical multiplexing. Someone looking to solve problems associated with an optical soliton communication system like the *Nakazawa* system would not look to a reference about optimizing techniques like *Ishikawa*. In fact, *Ishikawa* entirely fails to use the term “soliton” and does not appear to be related to such an optical soliton communication system.

Thus, independent claims 10, 11, 43, 56, 57 and 58 are allowable over *Nakazawa* in view of *Ishikawa*. Similarly, their respective dependent claims are allowable for at least this reason. Applicant respectfully requests that the Examiner withdraw the outstanding rejection of claims

10, 11, 43-45 and 47-58 under 35 U.S.C. § 103(a) as being unpatentable over *Nakazawa* in view of *Ishikawa*.

The Claims are Patentable Over *Nakazawa* in view of *Kikuchi*

Claims 10, 11, 43-45 and 47-58 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Nakazawa* in view of *Kikuchi*. This rejection is traversed for the reasons below.

Kikuchi is directed to a dispersion compensation method for an optical transmission system. In particular, *Kikuchi* discloses setting the amount of compensation at “100% of the amount of dispersion of the directly preceding transmission fiber section . . . to cancel influences of SPM [self phase modulation]” (col. 8, lines 8-13). In other words, *Kikuchi* discloses that the average dispersion of the overall transmission system is zero in that the amount of compensation is set at 100%.

Kikuchi, however, is not properly combinable with *Nakazawa*. In particular, *Nakazawa* specifies that the average dispersion over the soliton period is negative, and thereby teaches away from systems having an average dispersion over the soliton that is zero or positive. Thus, someone looking to modify the *Nakazawa* system, which requires a negative average dispersion of the soliton period, would not look to a system, such as the *Kikuchi* system, that specifies a zero average dispersion. Thus, the *Kikuchi* system is not properly combined with *Nakazawa*.

Thus, independent claims 10, 11, 43, 56, 57 and 58 are allowable over *Nakazawa* in view of *Kikuchi*. Similarly, their respective dependent claims are allowable for at least this reason. Applicant respectfully requests that the Examiner withdraw the outstanding rejection of claims 10, 11, 43-45 and 47-58 under 35 U.S.C. § 103(a) as being unpatentable over *Nakazawa* in view of *Kikuchi*.

The Claims are Patentable Over *Nakazawa* in view of *Dugan*

Claims 10, 11, 43-45 and 47-58 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Nakazawa* in view of *Dugan*. This rejection is traversed for the reasons below.

Dugan is directed to a method for compensating for optical dispersion within an optical communication system. In particular, *Dugan* discloses an optical system that provides over-compensation and under-compensation at various nodes “with a view to resulting in a final end-to-end dispersion of the entire optical path within acceptable limits” (col. 1, lines 53-57). For example, *Dugan* discloses an example where the end-to-end cumulative dispersion is within 1.7% of percent of the total optical fiber dispersion (col. 2, lines 58-62). In addition, *Dugan* discloses compensating each optical fiber section “in a low-resolution manner so that only a small number of different lengths of compensating fiber are necessary” (col. 3, line 66 through col. 4, line 1).

No motivation exists, however, for combining *Nakazawa* with *Dugan* because each reference is directed to solving a different, unrelated problem. In particular, *Nakazawa* is directed to an optical soliton communication system while *Dugan* is directed to techniques for reducing the end-to-end dispersion to almost zero while minimizing the number of different length compensating fibers. Someone looking to solve problems associated with an optical soliton communication system in *Nakazawa* would not look to a reference such as *Dugan* about reducing dispersion and minimizing the number of compensating fibers. In fact, *Dugan* entirely fails to use the term “soliton” and does not appear to be related to such an optical soliton communication system.

Thus, independent claims 10, 11, 43, 56, 57 and 58 are allowable over *Nakazawa* in view of *Dugan*. Similarly, their respective dependent claims are allowable for at least this reason. Applicant respectfully requests that the Examiner withdraw the outstanding rejection of claims 10, 11, 43-45 and 47-58 under 35 U.S.C. § 103(a) as being unpatentable over *Nakazawa* in view of *Dugan*.

CONCLUSION

All of the stated grounds of rejection have been properly traversed or rendered moot. The Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections, and that they be withdrawn. The Applicant believes that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

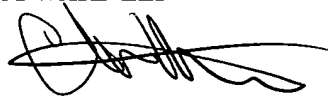
Prompt and favorable consideration of this Amendment is respectfully requested.

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